soft and break up easily when exposed to the weather or submitted to crushing tests. Among other cementing materials may be men­tioned, dolomite, barytes, fluorite and phosphate of lime, but these are only locally found.

Many sandstones contain concretions which may be several feet in diameter, and are sometimes set free by weathering or when the rock is split open by a blow. Most frequently these are siliceous, and then they interfere with the employment of the rock for certain purposes, as for making grindstones or for buildings of fine dressed stone. Argillaceous concretions or clay galls are almost equally common, and nodules of pyrites or marcasite; the latter weather to a brown rusty powder, and are most undesirable in building stones. Phosphatic, ferruginous, barytîc and calcareous concretions occur also in some of the rocks of this group. We may also mention the presence of lead ores (the Eifel, Germany), copper ores (Chessy and some British Triassic sandstones) and manganese oxides. In some districts (*e.g.* Alsace) bituminous sandstones occur, while in N. America many Devonian sandstones contain petroleum. Many Coal-Measures sandstones contain remains of plants preserved as black impressions.

The colours of sandstones arise mostly from their impurities; pure siliceous and calcareous sandstones are white, creamy or pale yellow (from small traces of iron oxides). Black colours are due to coal or manganese dioxide; red to haematite (rarely to copper oxide) ; yellow to limonite, green to glauconite. Those which contain clay, fragments of shale, &c., are often grey *(e.g.* the Pennant Grit of S. Wales).

Sandstones are very extensively worked, mostly by quarries but sometimes by mines, in all districts where they occur and are used for a large variety of purposes. Quarrying is facilitated by the presence of two systems of joints, developed approximately in equal perfection, nearly at right angles to one another and perpendicular to the bedding planes. Sometimes this jointing determines the weathering of the rock into square pillar-like forms or into mural scenery *(e.g.* the Quader Sandstein of Germany). As building stones sandstones are much in favour, especially in the Carboniferous districts of Britain, where they can readily be obtained. They have the advantage of being durable, strong and readily dressed. They are usually laid “ on the bed,” that is to say, with their bedding surfaces horizontal and their edges exposed. The finer kinds of sandstone are often sawn, not hewn or trimmed with chisels. Pure siliceous sandstones are the most durable, but are often very expensive to dress and are not obtainable in many pIaces. Sandstones are also used for grindstones and for millstones. For engineering

purposes, such as dams, piers, docks and bridges, crystalline rocks, as granite, are often preferred as being obtainable in larger blocks and having a higher crushing strength. Very pure siliceous sandstones (such as the gannisters of the north of England) may be used for lining furnaces, hearths, &c. As sandstones are always porous, they do not take a good polish and are not used as ornamental stones, but this property makes them absorb large quantities of water, and consequently they are often important sources **of** water supply (*e.g.* the water-stones of the Trias of the English Midlands). Silver is found in beds of sandstone in Utah, lead near Kommern in Prussia, and copper at Chessy near Lyons. (J. S. F.)

SANDUR, or Sundoor, a petty state of S. India, surrounded by the Madras district of Bellary. Area, 161 sq. m. Pop. (1901), 11,200; estimated revenue, £3500. The raja is a Mahratta of the Ghorpade family. On the western border is a hill range, which contains the military sanatorium of Ramandrug. Manganese and hematite iron ore have been found, both of unusual purity.

SANDUSKY, a city, port of entry, and the county-seat of Erie county, Ohio, U.S.A., on Sandusky Bay, an arm of Lake Erie, about 56 m. W. by S. of Cleveland. Pop. (1890), 18,471; (1900), 19,664, of whom 4002 were foreign-born and 295 were negroes; (1910 U.S. census) 19,989. Sandusky is served by the Lake Shore & Michigan Southern, the Cleveland, Cincinnati, Chicago & Saint Louis, the Pennsylvania, the Baltimore & Ohio, and the Lake Erie & Western railways, by several interurban electric lines, and by steamboats to the principal ports on the Great Lakes. Among the public buildings are the United States Government Building and the Court House. The city has a Carnegie library (1897), and is the seat of the Lake Laboratory (biological) of the Ohio State University, and of the Ohio Soldiers’ and Sailors’ Home (26 buildings).

At the entrance to Sandusky Bay is Cedar Point, with a beach for bathing. At the mouth of the harbour is Johnson’s Island, where many Confederate prisoners were confined during the Civil War. A few miles farther N. are several fishing resorts, among them Lakeside and Put-in-Bay; at the latter the United States govern­ment maintains a fish hatchery, and out of the bay Oliver Hazard Perry and his fleet sailed on the morning of the 10th of September 1813 for the Battle of Lake Erie. Sandusky has a good harbour, which has been greatly improved by the United States government;

and its trade in coal, lumber, stone, cement, fish, fruit, ice, wine and beer is extensive; in 1908 the value of its exports, chiefly to Canada, was $580,191 and the value of its imports $57,762. The value of its factory products increased from $2,833,506 in 1900 to $4,878,563 in 1905, or 72∙2 %.

English traders were at Sandusky as early as 1749, and by 1763 a fort had been erected ; but on the 16th of May of that year, during the Pontiac rising, the Wyandot Indians burned the fort. The first permanent settlement was made in 1817, and in 1845 Sandusky was chartered as a city.

**SANDWICH, EDWARD MONTAGU, or MOUNTAGU, 1sτ**

Earl **of** (1625-1672), English admiral, was a son of Sir Sidney Montagu (d. 1644) of Hinchinbrook, who was a brother of Henry Montagu, 1st earl of Manchester, and of Edward Montagu, 1st Lord Montagu of Boughton. He was born on the 27th of July 1625, and although his father was a royalist, he himself joined the parliamentary party at the outbreak of the Civil War. In 1643 he raised a regiment, with which he distinguished himself at the battles of Marston Moor and Naseby and at the siege of Bristol. Though one of Cromwell’s intimate friends, he took little part in public affairs until 1653, when he was appointed a member of the council of state. His career as a seaman began in 1656, when he was made a general-at-sea, his colleague being Robert Blake. Having taken some part in the operations against Dunkirk in 1657, he was chosen a member of Cromwell’s House of Lords, and in 1659 he was sent by Richard Cromwell with a fleet to arrange a peace between Sweden and Denmark. After the fall of Richard he resigned his command and joined with those who were frightened by the prospect of anarchy in bringing about the restoration of Charles II. Again general-at-sea early in 1660, Montagu carried the fleet over to the side of the exiled king, and was entrusted with the duty of fetching Charles from Holland. He was then made a knight of the Garter, and in July 1660 was created earl of Sandwich. His subsequent naval duties included the conveyance of several royal exiles to England and arranging for the cession of Tangier and for the payment of £300,000, the dowry of Catherine of Braganza.

During the war with the Dutch in 1664-1665 Sandwich commanded a squadron under the duke of York and distinguished himself in the battle off Lowestoft on the 3rd of June 1665. When the duke retired later in the same year he became commander-in- chief, and he directed an unsuccessful attack on some Dutch merchant ships which were sheltering in the Norwegian port of Bergen; however, on his homeward voyage he captured some valuable prizes, about which a great deal of trouble arose on his return. Personal jealousies were intermingled with charges of irregularities in dealing with the captured property, and the upshot was that Sandwich was dismissed from his command, but as a solatium was sent to Madrid as ambassador extraordinary. He arranged a treaty with Spain, and in 1670 was appointed president of the council of trade and plantations. When the war with the Dutch was renewed in 1672 Sandwich again commanded a squadron under the duke of York, and during the fight in Southwold Bay on the 28th of May 1672, his ship, the “ Royal George,” after having taken a conspicuous part in the action, was set on fire and was blown up. The earl’s body was found some days later and was buried in Westminster Abbey. Edward (d. 1688) the eldest of his six sons, succeeded to the titles; another son, John Montagu (*c.* 1655-1728) was dean of Durham.

Lord Sandwich claimed to have a certain knowledge of science, and his translation of a Spanish work on the *Art of Metals* appeared in 1674. Many of his letters and papers are in the British Museum, the Bodleian Library at Oxford, and in the possession of the present carl of Sandwich. He is mentioned very frequently in the *Diary* of his kinsman, Samuel Pepys. See aIso J. Charnock, *Biographia Navalis,* vol. i. (1794); John Campbell, *Lives of the British Admirals,* vol. ii. (1779); and R. Southey, *Lives of the British Admirals,* vol. v. (1840).

**SANDWICH, JOHN MONTAGU, 4TH** Earl of (1718-1792), was born on the 3rd of November 1718 and succeeded his grandfather, Edward, the 3rd earl, in the earldom **in** 1729. Educated at Eton and at Trinity College, Cambridge, he spent some time in travelling, and on his return to England in 1739 he took his